

**Mumbai University**

**Question Paper**

**[IDOL – REVISED COURSE]  
(APRIL – 2013)**

**PAPER - IV**

**ELECTIVE**

**GEOGRAPHIC  
INFORMATION  
SYSTEM**

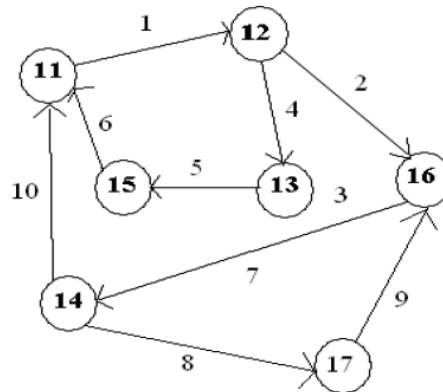
Time: 3 Hours

Total Marks: 100

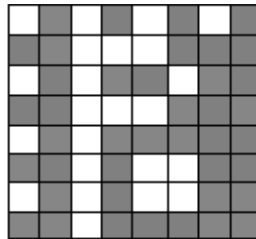
- N.B.:** (1) All Question are Compulsory.  
 (2) Make Suitable Assumptions Wherever Necessary And State The Assumptions Made.  
 (3) Answer To The Same Question Must Be Written Together.  
 (4) Number To The Right Indicates Marks.  
 (5) Draw Neat Labeled Diagrams Wherever Necessary.  
 (6) Use of Non – Programmable Calculator is allowed.

**Q.1 ATTEMPT ANY TWO QUESTIONS: (10 MARKS)**

- (A) Describe the four types of Map Projection by preserved property. (5)  
 (B) Explain the Neighborhood Operations with suitable example. (5)  
 (C) Explain Map-To-Map Transformation. (5)  
 (D) Write the Adjacency Matrix for the following Diagram. (5)

**Q.2 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

- (A) Explain the State Plane Coordinate System with suitable example. (5)  
 (B) List and explain the Map Projection Parameters. (5)  
 (C) Draw a Quad Tree for the following: (5)



Also Code the Spatial Index of the Shaded Feature.

- (D) Explain the Region Data Model with suitable example. (5)  
 (E) Explain Cell-By-Cell Encoding with suitable example. (5)  
 (F) Write a short note on TIGER. (5)

**Q.3 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

- (A) What is Metadata? Explain. (5)  
 (B) Explain Digitizing with suitable example. (5)  
 (C) Explain Affine Transformation. (5)  
 (D) List and explain various Resampling Methods with suitable example. (5)  
 (E) What is the role of Control Points in Affine Transformation? Give suitable example. (5)  
 (F) Explain the concept of Scanning. (5)

**[TURN OVER]**

**Q.4 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

- (A) Explain the two types of Attribute Table. (5)
- (B) Define the following terms: (5)
- (i) *Categorical Data*
  - (ii) *Feature Attribute Table*
  - (iii) *Numeric Data*
  - (iv) *Interval Data*
  - (v) *Primary Key*
- (C) Explain Network Database with suitable example. (5)
- (D) What is Normalization? What are the objectives of Normalization? (5)
- (E) Explain the Join and Relate Operations of tables in Relational Database. (5)
- (F) Write a short note on Map Production. (5)

**Q.5 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

- (A) Write a short note on Data Visualization. (5)
- (B) What are the different types of graphs used for Data Exploration? (5)
- (C) Explain Cumulative Distribution and Scatterplot types of graph with suitable example. (5)
- (D) What is the output of the following for a statement (slope = 2 ) OR (NOT(Aspect =1)) (5)
- (E) Explain Spatial Aggregation and Data Classification. (5)
- (F) Describe brushing as a Technique for Data Exploration. (5)

**Q.6 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

- (A) Describe variations in Buffering. (5)
- (B) List and explain various Overlay Operations based on Boolean Connector. (5)
- (C) What are the applications of Overlay? (5)
- (D) Explain Spatial Autocorrelation with example. (5)
- (E) Explain the following Map Manipulation Operations with example. (5)
- (i) Append (ii) Split
- (F) Find the Zonal Mean for the input raster(a) using a zonal raster(b) (5)

2	7	1	1	1	1	1	2
9	8	5	3	1	1	1	2
2	8	4	6	3	3	2	2
1	4	5	3	3	3	3	3
(a)				(b)			

**Q.7 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

- (A) List Global Methods and explain any one. (5)
- (B) Describe how Semivariance can be used to qualify the spatial dependence in a Data Asset. (5)
- (C) Explain the Density Estimation Local Method. (5)
- (D) Explain Universal Kriging. (5)
- (E) Write a short note on Spatial Interpolation. (5)
- (F) Explain the use of binning process used in Kriging. (5)